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## **The Knowledge Exploration Assistant**

*Better Knowledge for Better AI, Better AI for Better Knowledge*

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# The Knowledge Exploration Assistant

Better Knowledge for Better AI,  
Better AI for Better Knowledge

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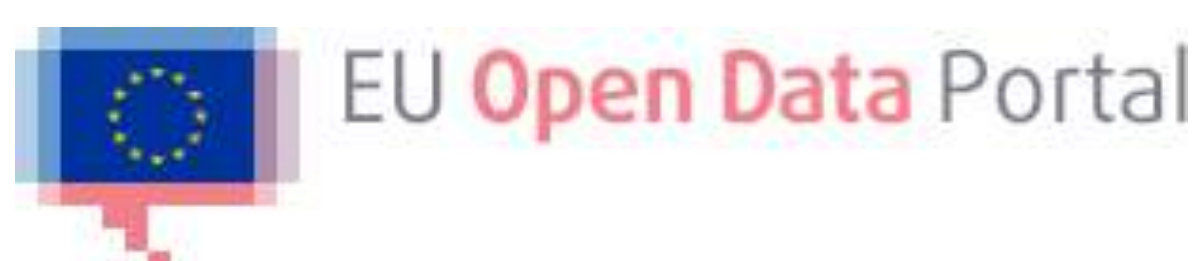


Connected Knowledge  
On the Web

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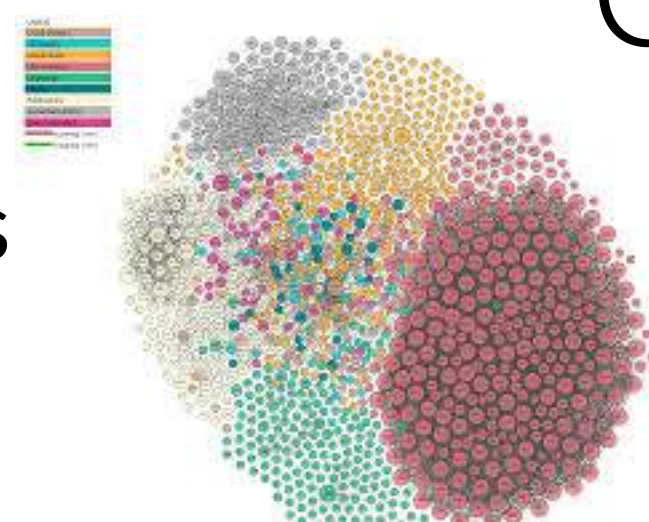
13941 datasets



1000 datasets  
from 48 organizations

OPEN DATA DK

28 billion facts  
LOD Cloud



3.9 billion  
Internet Users

2 billion  
Smartphone Users

Can a **smart assistant** help non-expert users  
**discover** and **make sense** of the rich  
**information available on the Web?**

## Assistance for Knowledge Exploration

Better Knowledge for Better AI

- **Open Data Exploration:** easy access to interesting information and insights from the Web of open datasets
- **Dataset understanding:** profile the content of the dataset, extract trends, entities mentioned, understand numeric values semantics
- **Knowledge Graph for Research:** understands concepts in the academic literature, technology, research fields...
- **Content understanding:** beyond keyword query and author citation when searching for literature or fact-checking
- **Paper & Dataset suggestions:** given a topic or a task identify relevant subjects to expand the research

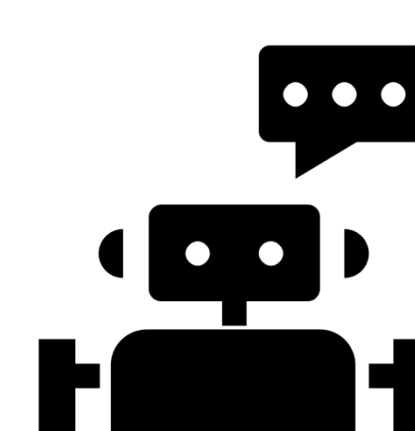
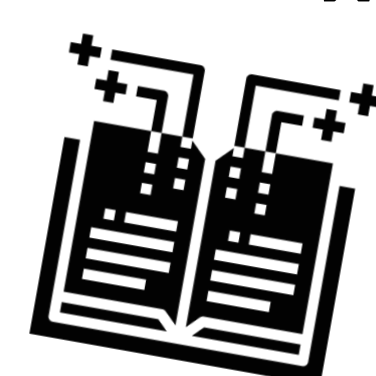


*I have a dream for the Web in which  
computers become capable of analyzing  
all the data on the Web*

- Tim Berners Lee

*And what should they do  
with all that Data?*

- M. L.



*Can you imagine having  
this conversation with your smart assistant?*

Help me plan the weekend

Oh! Denmark's weather is the worst!

Ok, so what do you propose?

You are in Aalborg, this weekend is likely to rain. I can suggest something indoor.

Not true! Denmark has average 703 mm of rain per year while Norway 1414

You could visit your friend Dave in Aarhus. There is an exhibition at the Art Museum.

## Personal Knowledge Assistant

Better AI for Better Knowledge

- **Personal Knowledge Graph:** keeps track of preferences & interactions, models user's world-view
- **Personalize Information Search:** understands user intentions, context, latent needs
- **Hybrid query answering:** query that span over both personal and global information
- **Privacy aware profiles:** separate preference profiles when querying for remote information so that no sensitive data is transmitted
- **Learned Exploration strategies:** design machine learning methods that can learn to provide interesting suggestions

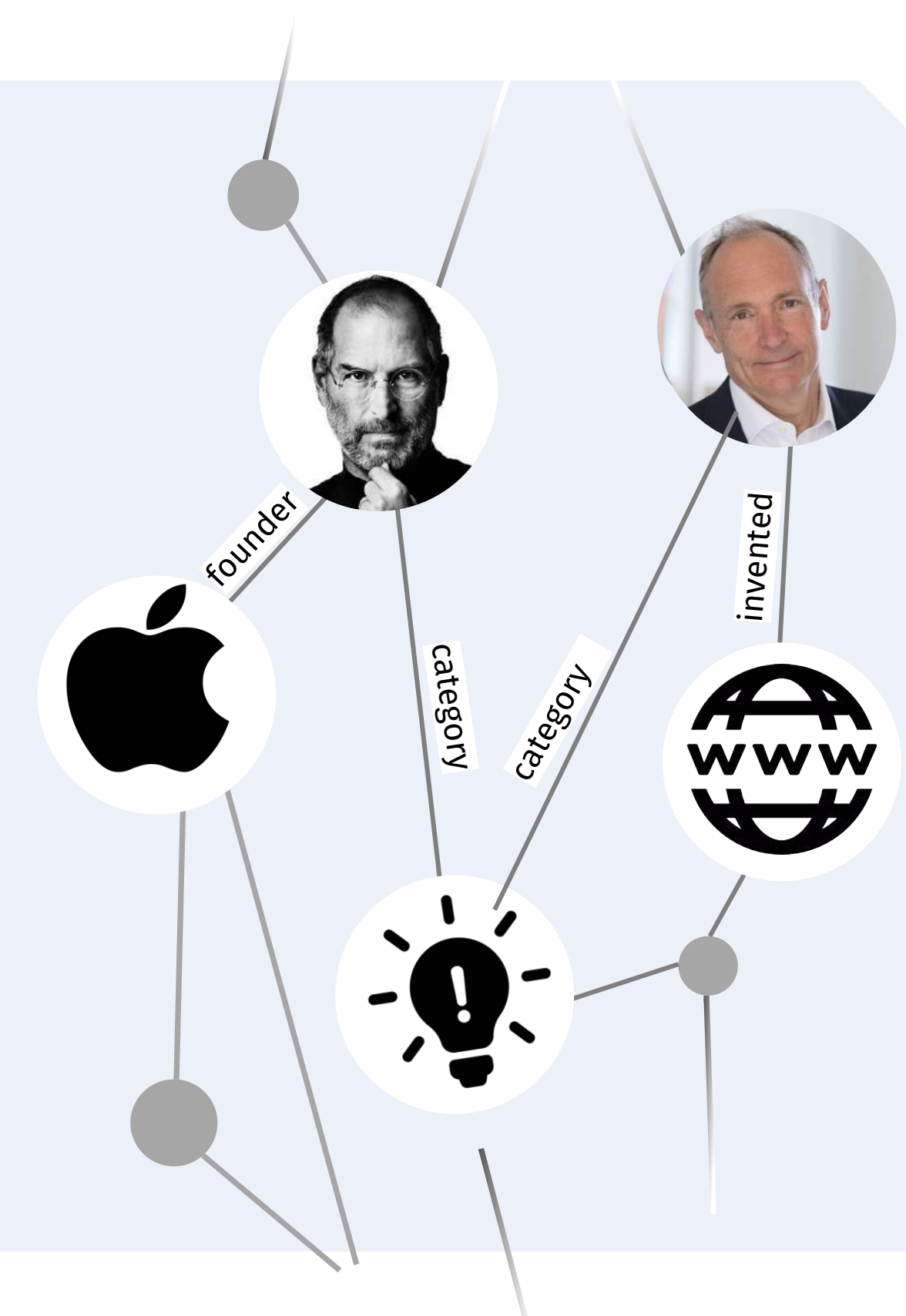


## Research Questions

- How can a smart assistant identify and retrieve interesting insights from the linked open data cloud?
- How to model complex information needs and allow users to perform complex analytics without the use of complex query languages?
- How to teach a machine to automatically understand the contents of an unknown dataset?
- How to model, store, and query a personal knowledge graph in a decentralized and privacy-aware architecture?

## Core Concepts

- Linked Open Data
- Knowledge Graphs
- Semantic Web (RDF, SPARQL)
- Graph Databases
- Data Exploration, Data Mining
- Smart Personal Assistant



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